

National Repository of Academic, Scientific, Technological and Innovation Information (CTI.MX)/México. An Analysis on the Beta Version Implementation

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ABSTRACT

In this paper the preliminary observations that are result of a first assessment stage of the implementation of the Beta version of the National Repository of Academic, Scientific, Technological and Innovation Information (CTI.MX)/ Mexico are being presented.

This preliminary research is a part of a larger case study that is being analyzed for the doctoral thesis: Open Repositories as Scientific Infrastructure for Research Institutions and Centers of the Education in the Knowledge Society doctorate program of Salamanca's University.

This first analysis is based on empirical observation, on the user's experience and on a preliminary contrast with both the guidelines and standards adopted as international common practice, as well as with the guidelines issued by CONACyT (Mexico's National Council of Science and Technology), since it is the federal government's office in charge of the creation, operation and development of the CTI.MX.

CCS Concepts

H.3.7 [Digital Libraries]: Dissemination, Standards, Systems issues, User issues

Keywords

Open Access, institutional repository, policies.

1. INTRODUCTION

During the past decades, the development and evolution of the new information and communication technologies have substantially modified the scientific communication system at a global scale, thus generating changes in the production, access, conservation, management and distribution of the information of an increasingly more digital environment [1, 2, 3].

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Based on the technological advances and on a change of paradigms in the world of scientific publication, an Open Access Movement appears; a movement developed by a group of researchers in favor of a more agile, efficient and democratic exchange of scientific information [4].

The principles of the Open Access Movement promote free access for all to the scientific, academic and cultural information and knowledge that is being produced, by means of the Internet. They remove every legal, financial and technical obstacle that could impede such access and hence allow the use, download, copy and distribution of information, knowledge and resources, with the only provision that the reproduction and distribution of the information must acknowledge both the author's right on the integrity of their work as well as its right to be properly acknowledged and quoted [5, 6, 7].

Alongside with the benefits of communicating, broadcasting and giving open access to the scientific, academic and cultural information to all, the Open Access Movement also fosters the development and innovation of the economies and ecosystems that are based on knowledge and on the information and communication technologies [8, 9, 10, 11, 12].

The Joint Statement About Open Access by COAR and UNESCO state that "The creation and transfer of scientific knowledge are critical to building and sustaining socio-economic welfare and integration in the global economy. In the long run, no region or nation can remain a simple 'user' of new knowledge but must also become a 'creator' of new knowledge." [13].

Under these premises, we currently find an "increasing interest and a great concern about the public nature of scientific information. Several institutions claim that research that has been financed with public trust, produced for public interest, should remain in the public domain" [14].

Facing such demands, governments and institutions, universities and public research centers and institutions throughout the world, as well as other agents of the production and communication of scientific information ecosystem, have been developing and implementing several mechanisms that would allow them to "remove the barriers to Open Access" [15] and adopt and develop the principles of the movement [16, 17]. They also encourage and extend its adoption as a catalyzing factor and a mechanism for the democratization of the access to information and knowledge, under a human rights framework; the right to freedom of information or the right to information, all of it within the new

context that the Internet and the Information Society have brought along [18, 19, 20, 21].

The Open Access Movement suggests two main strategies in order to develop and accomplish open access: the auto-archiving of the documents in repositories –green or self-archiving route– and the publication in open access journals –gold or open access journals–. Both strategies can very well complement each other and be implemented in an integrated and coordinated way [12], or can be implemented in a separate and autonomous way.

Since the object of study of this research is a repository, we will focus on addressing those Open Access aspects that are related to the green route only, more specifically, those that are linked to the policies, guidelines and standards that are established and adopted as international common practices by the different entities and agencies that conform the global Open Access Movement [22, 3], as well as those that are issued in the regional scenery and in the national context [23, 24, 25].

2. CONTEXT AND MOTIVATION THAT GUIDE THE DISSERTATION RESEARCH

This paper is part of the case study that evaluates the implementation process of the Mexican government’s policy of Open Access, Access to the Scientific, Technological and of Innovation Information and of the National Repository, promulgated on May 2014, based on the decree by which several regulations are reformed and added to the Science and Technology Law, General Law of Education and National Council of Science and Technology Organic Law [26].

All of these reforms and additions aim to lay out and establish in the national legislation and within the framework of the State policy’s foundations that support the integration of the National System of Science, Technology and Innovation “the promotion, development, linkage and broadcasting of Mexican scientific production by means of the use and support of the new information technologies and, if it is the case, by means of the use of open access platforms”¹ when it has been “financed with public resources or when public infrastructure has been used for its fulfillment, always respecting both the guidelines of patents, of intellectual or industrial property protection, of national security and of copyright, among others, as well as the information that, due to its nature or to the author’s will, has to be held as confidential or reserved”².

The strategy and mechanism for the implementation and fulfillment of the intentions portrayed in this reforms are based on the construction of a National Repository (see Figure 1) (developed, coordinated, directed and managed by CONACyT)³,

as well as on the construction and linkage of Repositories by scientific and technological –or others- disciplines, developed and managed by the Higher Education Institutions and Research Centers of the country⁴.



Figure 1. National Repository Conceptualization

Henceforth the promulgation of the Open Access Policy, several legislative, administrative and technical actions are being developed, stipulated and directed in order to boost the processes and mechanisms for its implementation (see Figure 2)⁵.



Figure 2. Implementation Process of the National Policy

¹ Reform of the II Fraction of the Article 2 of the Science and Technology Law

² Addition of the Chapter X, Article 65 of the Science and Technology Law

Reform of the Fraction VIII of the Article 14 of the General Law of Education

Addition to the Fraction XII of the Article 2 of the Organic Law of the National Council of Science and Technology

³ Addition to the Chapter X, Articles 70, 72 of the Science and Technology Law

Additions to the Fractions XII and XVII of the Article 2 of the Organic Law of the National Council of Science and Technology

⁴ Addition of the Chapter X, Article 64 of the Science and Technology Law

⁵ Addition of the Chapter X, Article 64 of the Science and Technology Law

Addition to the Fractions XII and XVII of the Article 2 and subsequent of the Organic Law of the National Council of Science and Technology

Transitory of the Organic Law of the National Council of Science and Technology

It is within the implementation process of the National Policy of the Open Access framework that this research is being made, as well as in accordance to the research objectives of the doctoral thesis: “Open Repositories as Scientific Infrastructure for Research Institutes and Centers”, whose object of study are the National Repository and the Repositories of the Public Research Centers of CONACyT.

The motivations that guide both the development of this research as well as the doctoral investigation are the acknowledgement and defense of the green route as a model and strategy for open access, feasible for its implementation and adoption by research institutions and centers, based on the principle that repositories should be considered and acknowledged not only as prop infrastructure but as a first-rate infrastructure.

3. STATE-OF-THE-ART

On January 2003, Clifford Lynch, Executive Director of Coalition for Networked Information (CNI)⁶ published in the number 226 of the now disappeared weekly publication ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC⁷, an article entitled: "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age"; which happened to be one of the most meaningful and relevant articles for the conceptualization and recognition of institutional repositories as tools for change in the communication, academic and scientific system.

In his article, Lynch highlights and reflects on the transcendency of the advances and contributions that institutional repositories have been providing and on what they could provide in the near future: “Institutional repositories can encourage the exploration and adoption of new forms of scholarly communication that exploit the digital medium in fundamental ways”...“facilitating change not so much in the existing system of scholarly publishing but by opening up entire new forms of scholarly communication that will need to be legitimized and nurtured with guarantees of both short and long-term accessibility” [27]. He also gives warning on the possible problems that we might face and solve during their implementation and development: “An institutional repository can fail over time for many reasons: policy (for example, the institution chooses to stop funding it), management failure or incompetence, or technical problems” [27].

The initial warning of Lynch remains and will stay valid as a consequence of the complexity and diversity of the ecosystem that shapes the context of development and operation of each repository, as well as because of the interoperability that is required and demanded by the open access principles to all the ecosystems that seek to be integrated and conformed as a part of the open access “biosphere”.

The Confederation of Open Access Repositories (COAR) states about this matter that: “the real power of Open Access lies in the

possibility of connecting and tying together repositories, which is why we need interoperability” [28].

Therefore, the repositories must be understood within a Framework of distributed environment and under an ecosystem dynamic.

The resulting complexity of these processes has generated several challenges that up to this day are considered inherent and binding to the development and implementation of a repository. Such challenges are for the most part relative to the interoperability but also to the criteria of quality, functionality, management and administration, of legislation as well as of economic and political nature.

Each one of the challenges concern to agents, structures and processes at different levels of performance and responsibility, but the answer and the solution given must always be comprehensive, sustainable and scalable.

With the intention of solving the challenges and difficulties concerning repositories, several initiatives have been created which establish guidelines, standards, rules and practices, as well as guides and instruments of verification and evaluation that intend to contribute to standardize, adopt and reproduce the experiences of success and the best practices in the interest of the open access principles.

So, these efforts emerge from different sectors and, as we have seen, they involve several agents (associations, institutions, organizations, companies and governments) who can act both as individuals as well as a part of a collective, but always under and around the influence of the community of open access repositories around the world.

For convenience purposes, we will only list in this section the guidelines and standards as well as the regulations and practices of the most reference and that, according to our judgment, provide an acceptable frame for a first analysis; an analysis restricted to the evaluation from the user’s experience and to the empirical observation of the guidelines and standards both established and adopted as international common practices, as well as issued by CONACyT in the framework of their implementation of the National Repository strategy | CTI.MX (<https://www.repositorionacionalcti.mx>) (see Figure 3).



Figure 3. National Repository | CTI.MX

⁶ Coalition for Networked Information <https://www.cni.org/>

⁷ ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC was published six times per year by the Association of Research Libraries from 1990 through 2008. With issue no. 262 (February 2009), this publication became online-only and the title changed to Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC. <http://old.arl.org/resources/pubs/br/index.shtml>

4. HYPOTHESIS/THESIS AND/OR PROBLEM STATEMENT

The hypotheses that we aim to validate or reject with the development of this study are the following:

-The implementation of the Beta version of the National Repository (CTI.MX) shows evidence of alignment with, and fulfillment of, policies, guidelines, standards and criterion established and adopted as international common practices.

-Beta version implements the General Guidelines for the National Repository and the Institutional Repositories (LGRNRI) and the Technical Guidelines for the National Repository and the Institutional Repositories (LTRNRI) issued by CONACyT.

5. RESEARCH OBJECTIVES/GOALS

The research goals that we consider for the development of this study on this first stage are:

-To verify the usability, accessibility and interaction of the Beta version interface of the National Repository (CTI.MX), based on the user's experience at a consultation level.

-To verify the usability, accessibility and interaction of the Beta version interface of the National Repository (CTI.MX), based on the user's experience at a deposit or publication level.

-To identify the policies, guidelines, standards and criterion established and adopted as international common practices in the implementation of the Beta version of the National Repository (CTI.MX).

-To assess the fulfillment or un-fulfillment of the General Guidelines for the National Repository and the Institutional Repositories (LGRNRI) and the Technical Guidelines for the National Repository and the Institutional Repositories (LTRNRI) issued by CONACyT in the implementation of the Beta version of the National Repository (CTI.MX).

6. YOUR RESEARCH APPROACH AND METHODS, INCLUDING RELEVANT RATIONALE

The research approach for this first stage of the study is completely qualitative, since its objectives are based on the exploration, identification and evaluation of the state and development that the implementation of the Beta version holds facing both the policies, guidelines, standards and criteria established and adopted as international common practices, as well as the General Guidelines for the National Repository and the Institutional Repositories (LGRNRI) and the Technical Guidelines for the National Repository and the Institutional Repositories (LTRNRI) issued by CONACyT in the implementation of the Beta version of the National Repository (CTI.MX).

The intention of releasing a Beta version is to offer to a wider public or a certain number of selected users (betatesters) a first whole vision of a program or a platform so that it is tested from the final users' perspective, users then may inform of errors or suggest improvements by means of a feedback tool. This process is a standardized practice in the projects of development of systems and software, and it is a part of the System Design Life Cycle (SDLC) stages.

The release of the Beta version of the National Repository (CTI.MX) should mean the implementation and exercise of a good practice, as well as the development and fulfillment of a

stage that is considered a part of the implementation strategy of the National Repository (CTI.MX) managed by CONACyT.

Therefore, to count with a Beta version would allow the participation of the users involved or experts, as well as of support or generic users, each of them playing their own specific role. This participation would provide feedback of great value and impact for the development and liberation of the Release Candidate (RC) and Release to Manufacturing (RTM) versions.

With the intention of going a little further from a single evaluation based on the user's experience, and as we have mentioned in the objectives of this paper, we decided to carry out an initial confrontation of the guidelines and standards that are adopted as international common practices. In order to do so, we have chosen 4 papers that, due to their scope, coverage and the indicators they have suggested and, according to our own judgment and study interests, can be taken as valid parameters and references for the fulfillment of this confrontation exercise (see Tables 1, 2, 3 and 4).

Along with the confrontation made with these papers, we also confronted it all with the very own guidelines issued by CONACyT, the LGRNRI and LTRNRI (see Tables 5 and 6).

7. RESULTS TO DATE AND THEIR VALIDITY

According to our own judgment, the release of the Beta version of the National Repository (CTI-MX) can be considered an unsuccessful release. The observations and results that we were able to study and document, as we had planned to do as an initial part and objective of this study, show several deficiencies in the product and are an evidence of a poorly planned and executed strategy and implementation, all of which gave place to an insufficient product and process.

The confrontation with the indicators that were chosen to carry out this first evaluation, show weaknesses in the development of both the platform and interface. They also show meaningful violations to both the guidelines and standards adopted as international common practices (see Tables 1, 2, 3 and 4) as well as to the guidelines issued as a part of the National Policy of CONACyT, the LGRNRI and LTRNRI. (see Tables 5 and 6).

From the objectives that we had planned to achieve, we were not able to verify and evaluate the user's experience at a deposit or publication level, since this option is disabled or restricted and offers no option for getting an ID or request for a profile.

The hypothesis that we had planned to corroborate with the development of this study, must be considered as not valid, since the evidence of alignment and fulfillment of the standards and guidelines adopted as international common practices are scarce or sometimes even absent. The same happens with the implementation of the own CONACyT guidelines (LGRNRI and LTRNRI), since they are not followed or are followed completely.

As for the browsing experience, it has proven to also be poor and insufficient. There is an evident lack and absence of resources and it is a reflection of the violation of the guidelines and standards stated above (both international and CONACyT's). The Repository has neither been populated nor it has recollected the already existing institutional repositories of the country so far (see Figure 4).

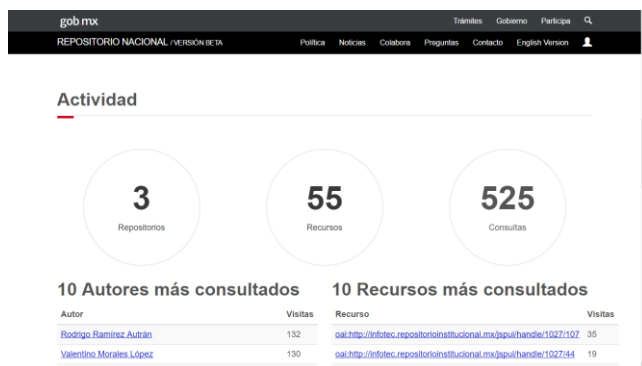


Figure 4. Contents of the Repository

There is evidence of migration and building of international repositories that belong to the Public Research Centers of CONACyT under the new platform model, but for now, they are not visible in the National Repository web portal (CTI.MX), neither they are recollected by it.

Facing the results that the confrontation has shown, as well as the observations done based on the browsing experience, we can confirm that the Beta version is inoperable as it is, so the benefits of the implementation and release of the National Repository (CTI.MX) as Beta version, are null and absolutely worthless.

Last, we must point out that releasing a Beta version of the National Repository (CTI.MX) with such deficiencies, as well as having presented it to a wide sector of the community of repositories of Latin America, like it was done during the discussion panel that was held within the frame of the 5th edition of the seminar *Entre Pares* (Among Peers): The National Repositories in Latin America. The cases of Brazil, Argentina, Peru and Mexico, is an action and strategy that diminishes the impact and benefits that were expected from the implementation of the National Repository and the Institutional repositories. This decision also harms the consolidation of the Open Access Policy, Access to the Scientific, Technological and of Innovation Information, and of the National Repository.

8. DISSERTATION STATUS

We are currently on a first stage of development and implementation since the Beta version was officially issued just at the beginning of this September 2016, within the framework of the 5th edition of the “Entre Pares” (Among Peers) seminar⁸. It has not yet been totally frozen for its preview, trial and testing, and it still shows, up to this day, constant editions and updates that are not acceptable or appropriate for the launching of a Beta version.

It is expected that in the following months and before 2016 ends, we will be able to count on a frozen and stable Beta version, one that would lead to the second stage of this research, allowing us to develop a more reliable and solid preview, trial and testing. A Beta version from which we could make a qualitative and quantitative balance of the degree of implementation and development of both the policies, guidelines, standards and criteria established and adopted as international common practices as well as the General Guidelines for the National Repository and

⁸ 5th Edition of the “Entre Pares” (Among Peers) Seminar. Panel Discussion: National Repositories in Latin America. The cases of Brazil, Argentina, Peru and Mexico. <http://entrepares.conricyt.mx/materiales/presentaciones-2016>.

the Institutional Repositories (LGRNRI) and the Technical Guidelines for the National Repository and the Institutional Repositories (LTRNRI) issued by CONACyT.

9. CURRENT AND EXPECTED CONTRIBUTIONS

The results obtained in this first stage of the research might seem somehow incipient due to the obstacles and restraints that have influenced the moments and processes of the investigation but, having started to monitor and assess from the very beginning of the implementation, based on a Beta version that is still deficient, has allowed us to gather information and data that result from a poor strategy of development, implementation, evaluation and socialization of the launching of the National Repository (CTI.MX).

On a further analysis, this mistakes and deficiencies will become an object of study themselves and will also be added as a part of the case study of the doctoral thesis project.

This analysis will also allow us to suggest improvements in the implementation strategy of the National Repository (CTI.MX) that is being developed and managed by CONACyT.

The contributions of this first stage of the study and its further development on a second stage will doubtlessly be the identification and documentation of the mistakes in the implementation process that have been discovered so far and that show deficiencies which could be referred to a bad planning and a poor strategy.

The analysis and interpretation that will be carried out based on this results, will allow us to enhance or boost and contribute with new guidelines and criterion that will contribute to the development of better practices in the implementation of national and institutional repositories.

So, the results that we have gathered up to this day, turn out to be a collection of negative, null and inconclusive results of great worth and value for the research.

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11. REFERENCES

- [1] ACRL. (2003). Principios y estrategias para reformar la comunicación erudita. *GeoTrópico*, 1(2), 155–159. <http://www.geotropico.org/ACRL-1-2.pdf>. Accessed: 2016-09-07.
- [2] San José-Montano, B. (2009). Acceso abierto (open access), un modelo necesario de comunicación científica. *Rev Pediatr Aten Primaria*, 11(42), 299–311. http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1139-76322009002200111&lng=es&nrm=iso. Accessed: 2016-09-07.
- [3] Galina-Russell, I. (2011). La visibilidad de los recursos académicos. Una revisión crítica del papel de los repositorios institucionales y el acceso abierto. *Investigación Bibliotecológica*, 25(53), 159–183. http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0187-358X2011000100007&lng=es&nrm=iso. Accessed: 2016-09-07.
- [4] Ponsati, A., & Bernal, I. (2003). Tiempo para nuevos modelos de comunicación y difusión de la ciencia. *LYCHNOS*, (7), 42–48.

- http://www.fgcsic.es/lychnos/es/es/articulos/tiempo_para_nuevos_modelos_de_comunicacion_y_difusion_de_la_ciencia. Accessed: 2016-09-07.
- [5] Budapest Open Access Initiative (BOAI). (2003). *GeoTrópico*, 1(1), 98–100. http://www.geotropico.org/1_1_Documentos_BOAI.html. Accessed: 2016-09-07.
- [6] Declaración de Bethesda sobre Publicación de Acceso Abierto. (2003). http://ictlogy.net/articulos/bethesda_es.html. Accessed: 2016-09-07.
- [7] La Declaración de Berlín sobre acceso abierto. (2003). *GeoTrópico*, 1(2), 152-154. http://www.geotropico.org/1_2_Documentos_Berlin.html. Accessed: 2016-09-07.
- [8] Serrano-Muñoz, J., & Prats-Prat, J. (2005). Repertorios abiertos: el libre acceso a los contenidos. *Revista de Universidad Y Sociedad Del Conocimiento*, 2(2), 17–25. <http://www.uoc.edu/ojs/index.php/rusc/article/download/v2n2-contenidos-digitales/745#page=19>. Accessed: 2016-09-07.
- [9] Steinmueller, W. E. (2002). Las economías basadas en el conocimiento y las tecnologías de la información y la comunicación. *Revista Internacional de Ciencias Sociales*, 171, 1-17. <http://www.hacienda.go.cr/centro/datos/Articulo/Las%20econom%C3%ADas%20basadas%20en%20el%20conocimiento.pdf>. Accessed: 2016-09-07.
- [10] RTI International. (????). *Creación de ecosistemas de conocimiento*. https://www.rti.org/sites/default/files/brochures/rti_sp_knowledgeecosystems.pdf. Accessed: 2016-09-07.
- [11] Herrera-Guilhouxd, D. M. (????). *La Economía basada en el Conocimiento: su conceptualización en México*. <http://www.ur.mx/LinkClick.aspx?fileticket=5qciqDF1g7O%3D&tabid=2636&mid=7523&language>. Accessed: 2016-09-07.
- [12] Suber, P. (2015). *Acceso Abierto*. Universidad Autónoma del Estado de México. <http://ri.uaemex.mx/bitstream/handle/20.500.11799/21710/Acceso%20Abierto.pdf?sequence=5&isAllowed=y>. Accessed: 2016-09-07.
- [13] COAR-UNESCO. (2016). *Joint COAR-UNESCO Statement on Open Access*. http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/all-news/news/joint_coar_unesco_statement_on_open_access/. Accessed: 2016-09-07.
- [14] Sánchez-Tarragó, N. (2007). El movimiento de acceso abierto a la información y las políticas nacionales e institucionales de autoarchivo. *Revista Cubana de Información en Ciencias de la Salud*. 16(3). <https://dialnet.unirioja.es/servlet/articulo?codigo=2374654>. Accessed: 2016-09-07.
- [15] Swan, A. (2013). *Directrices para Políticas de Desarrollo y Promoción de Acceso Abierto*. UNESCO. <http://unesdoc.unesco.org/images/0022/002225/222536S.pdf>. Accessed: 2016-09-07.
- [16] Abadal, E. (2012). *Acceso abierto a la ciencia*. Editorial UOC. <http://eprints.rclis.org/16863/1/2012-acceso-abierto-epi-uoc-vfinal-autor.pdf>. Accessed: 2016-09-07.
- [17] Alonso, J., Subirats, I., & Martínez-Conde, M. L. (2008). *Informe APEI sobre acceso abierto*. APEI, Ed. <http://eprints.rclis.org/archive/00015107/01/informeapeiacceesoabierto.pdf>. Accessed: 2016-09-07.
- [18] Internet Rights and Principles Coalition. (2015). *Carta de Derechos Humanos y Principios en Internet*. IRP Coalition. http://internetrightsandprinciples.org/site/wp-content/uploads/2015/03/IRPC_spanish_1stedition_final.pdf. Accessed: 2016-09-07.
- [19] Bergeron, Michel. (2005). Ciencia, tecnología e innovación pueden hacer más en nuestra economía basada en el conocimiento. *Interciencia*, 30(10), 589-594. http://www.scielo.org.ve/scielo.php?script=sci_arttext&pid=S0378-18442005001000001&lng=es&tlng=es. Accessed: 2016-09-07.
- [20] Fraiman, W. (2013). Los científicos y el acceso a la información pública. *X Jornadas de Sociología*. Facultad de Ciencias de Buenos Aires. <http://cdsa.aacademica.org/000-038/733>. Accessed: 2016-09-07.
- [21] UNESCO. (????). *Acerca de la libertad de información*. <http://www.unesco.org/new/es/communication-and-information/freedom-of-expression/freedom-of-information/about/>. Accessed: 2016-09-07.
- [22] Sánchez, S., & Melero, R. (2006). La denominación y el contenido de los Repositorios Institucionales en Acceso Abierto: base teórica para la “Ruta Verde”. *EPrints in Library and Information Science*. <http://eprints.rclis.org/7613/>. Accessed: 2016-09-07.
- [23] LA Referencia. *Acuerdos Regionales*. <http://lareferencia.redclara.net/rfr/acuerdos-regionales>. Accessed: 2016-09-07.
- [24] CONACYT. (2014). *Lineamientos Generales para el Repositorio Nacional y los Repositorios Institucionales*. <http://www.sicyt.gob.mx/index.php/normatividad/2-conacyt/4-conacyt/630-lineamientos-generales-para-el-repositorio-nacional-y-los-repositorios-institucionales/file>. Accessed: 2016-09-07.
- [25] CONACYT. (2015). *Lineamientos Técnicos para el Repositorio Nacional y los Repositorios Institucionales*. <http://www.sicyt.gob.mx/index.php/normatividad/conacyt-normatividad/conacyt/1499-lineamientos-tecnicos-para-el-repositorio-nacional-y-los-repositorios-institucionales/file>. Accessed: 2016-09-07.
- [26] Diario Oficial de la Federación. (2014, 20 mayo). *Decreto por el que se reforman y adicionan diversas disposiciones de la Ley de Ciencia y Tecnología, de la Ley General de Educación y de la Ley Orgánica del Consejo Nacional de Ciencia y Tecnología*. http://www.dof.gob.mx/nota_detalle.php?codigo=5345503&fecha=20/05/2014. Accessed: 2016-09-07.
- [27] Lynch, C. A. (2003). *Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age*. *ARL Bimonthly Report*. 226. <http://www.arl.org/storage/documents/publications/arl-br-226.pdf>. Accessed: 2016-09-07.
- [28] COAR. (2011). *The Case for Interoperability for Open Access Repositories (V.1.0)*. Working Group 2: Repository Interoperability. <https://www.coar-repositories.org/files/A-Case-for-Interoperability-Final-Version.pdf>. Accessed: 2016-09-07.

Annexes

Table 1. Parameter Indicators (Proposal No.1)

<u>Indicadores para la evaluación de repositorios institucionales de acceso abierto</u> (2104)	
Rocío Serrano Vicente, Remedios Melero Melero, Ernest Abadal Anales de Documentación Vol. 17, Núm. 2 (2014)	
Categories	Indicators
Technology	Software used Design (graphic identity) Data preservation Web 2.0 Authentication type Connection among internal systems Usage statistics
Procedures	Withdraw of digital objects Procedures Handbooks Style Handbooks Type of users that might deposit Deposit flows Copyright Massive import and export Metadata verification
Content	Growth rate of collections Document types Versions Open access Self-archiving policy Type of content Content preservation
Marketing	Institutional promotion Hyperlinks Public promotion Social media Publication of annual records Mechanisms to encourage self-archiving
Human resources	Professional staff employed Technical staff employed Awareness Training

Table 2. Parameter Indicators (Proposal No.2)

<u>Guía para la Evaluación de Repositorios Institucionales de Investigación</u> (2014)	
REBIUN Spain	
Categories	Indicators
Visibility	Institutional identification Presence in national and international repository directories National and international repository collectors Normalized name Friendly URL Initiatives to promote visibility 75% of OA content/ Institutional adherence to OA declarations (BBB)
Policies	Documents on declaration, mission and objectives Self-deposit policy Content policy Preservation of contents policy Reuse of metadata policy Viewable contact and support Institutional policy of OA
Legal Aspects	Author's approval on the copyright policies Publication handbook and copyright Copyright in metadata
Metadata	OAI_Dc dc:title dc:description dc:type dc:type OpenAIR dc:type OpenAIR vocabulary dc:date dc:rights dc:rights and level of access dc:creator dc:format dc:language dc:identifier Indexing policy Normalized system of classification Exportation of metadata: other formats Technical and of conservation metadata
Interoperability	OAI-PMH protocol Research resources sets Tagging of deleted records Delivery of records in lots
Log and Statistics	Permanent archived logs Repository statistics Robots and search engines access filters Double click filters
Security, Authenticity	Security copy procedures for metadata and documents Persistent identifiers of contents

Table 3. Parameter Indicators (Proposal No.3)

<u>Indicadores para evaluar repositorios universitarios argentinos, de la teoría a la práctica</u> (2011)	
Marcela Fushimi, Patricia Genovés, Mónica Pené, Carolina Unzurrunzaga Segundo Taller de Indicadores de Evaluación de Bibliotecas	
Categories	Indicators
Visibility	Institutional Web link Friendly URL Presence in national and international directories and collectors Internal diffusion of the repository Annual statistics of the repository
Interoperability	OAI-PMH protocol Persistent identifiers Selective collection of data Tagging of deleted records/ Adminemail tag in identify/ Response to identify order/ Normalized vocabulary DC type
Polices	Mission and objectives declaration Preservation of contents policy Reuse of metadata policy Contact information access
Legal aspects	Copyright information for the authors Copyright authorization Metadata copyright Communities
Communities	Number of communities that deposit Percentage of community members that deposit Percentage of deposited items
Services and Collections	# added value services # collections available Growth rate Amount of record Amount of digital objects/ % of full text document/ % OA digital objects Items deposited yearly Items downloaded yearly Public Access to statistics
Metadata	Descriptive international metadata technical and of preservation metadata Thematic normalized vocabularies Normalized classification
Interface	Homogeneous design Other languages Friendly search interface Search help Advanced search option Recovering full texts option Repository-OPAC linkage
Budget	Deposit cost Download cost Total staff Staff training cost Financing annual amount

Table 4. Parameter Indicators (Proposal No.4)

<u>Indicadores de calidad para evaluar repositorios institucionales</u> (2010) Leticia Barrionuevo Almuzara X WorkShop REBIUN	
Categories	Indicators
Software platform	OAI-PMH Protocol Supports OAIS Supports SOAP Plugins and scripts features Easy installation Installation handbooks Technical support Limited access by type of user Authentication Security metadata Customizable interface Multi languages/ IDs Management/ Defines collections/ Lots of objects import and export Lots of metadata import and export Format types Metadata standards Complex objects Preservation metadata Self-archive workflow Search engine Metadata engine Advanced search Hypertext in search results Search strategies
Information and support	Repository information Self-archive guide Copyright guide Editorial policies guide OA news Suggestions mailbox Contact and support email
Management and maintenance	Linkage with other library services/ Users training/ Authors' rewards/ Budget
Content	Types of documents Types of formats Content restrictions Massive uploading of documents Policy Reuse of data policy Self-archiving Policy Copyright Policy Quality, peer-review or similar Policy Content preservation Policy
Added value services	Statistics Alerts Web 2.0 Vocabulary control Authority control Self-archiving tool Profile creation Reference manager
Visibility	National and international directories/ National and international collectors/ normalized URL/ Indexed by search engine/ DRIVER guidelines/ openAIR guidelines/ Rankings
Impact and results	Users satisfaction Institutional acknowledgment of the repository Investigator's acknowledgement of the repository Society's acknowledgement of the repository

Table 5. LGRNRI

<u>Lineamientos Generales para el Repositorio Nacional y los Repositorios Institucionales</u> (2014) CONACYT México	
Categories	Indicators
OA Committee	Operation Legal attributions
National Repository objectives	Operation Linkage
Institutional Repository objectives	Purpose Preservation
Information	Types of information Archiving options
Coordination	OA coordination

Table 6. LTRNRI

<u>Lineamientos Técnicos para el Repositorio Nacional v los Repositorios Institucionales</u> (2015) CONACYT México	
Categories	Indicators
Information deposited	Qualities and characteristics of resources of information Qualities and characteristics of publications Qualities and characteristics of innovation products and technological development Qualities and characteristics of data Visibility and download Copyright Non-accepted resources for deposit Users that may deposit Deposit process Deleting resources of information
Creation of a National Repository	Objectives Observance Implementation Characteristics Management Technical area Administration area Unique ID Catalogues Interoperability Metadata structure User's interface Qualities and characteristics of the resources of information Copyright
Usability, training and copyright	Usability criteria Satisfaction criteria Technical support criteria Utility criteria Effectiveness criteria Training for the creation of the repository Training for the use of the repository Training on copyright
Grants and subsidies	Resources of information acquisitions Grants for the repository's consolidation Institutions that may receive a grant Grants for the development of improvement apps for the national repository